

can Physical Society at its meeting on February 27, 1904. The following is quoted from Science, April 1, as a summary of that paper, "On the microphotography of fog particles and the photographic study of atmospheric nucleation."

The author gave a description of his apparatus and methods, and illustrated the results by a series of ten lantern slides and many positives showing the microphotographs of fog particles. Most of these were strikingly distinct, the water globules ranging in size from about 0.0002 centimeters to 0.002 centimeters, according as fogs of different degrees of fineness were precipitated. The most highly graded nuclei, as shown by the presence of fog particles of all sizes, were obtained by an exposure of dust free air to the X rays from one to ten minutes, depending on the intensity of radiation. Much greater uniformity in the series of the nuclei is shown in the cases of phosphorus and ordinary air nuclei.

The author described a number of curious phenomena observed with these water particles, among which their continued motion when caught on a film of liquid oil, simultaneously to and fro between edges of the film, is most noteworthy. Particles moving in swarms in opposed directions are often in the focus of the microscope together, and thus lie very nearly in the same plane. The author finally remarked that the coronal method had now been so far perfected that the nucleation increment produced by a single gas flame in a moderately large lecture room could be detected in about ten minutes, even in the air collected from near the floor. This favorable quantitative result may then be supplemented qualitatively by the photographic method, which will show the presence of exceptionally small or large particles, whose effect vanishes from the corona as they are relatively few in number.

THE WINTER OF 1903-4 AT THOMPSON, WINDHAM COUNTY, CONN.

It is well known that one of the longest temperature records in New England is that kept by Miss Ellen D. Larned for over fifty years at Thompson, Windham County, Conn. A short note from her states that the past winter has been the coldest within the last half century. "We have been less afflicted with high winds and severe snowstorms than in some sections, but had excellent sleighing from December 30 to March 3." The following is the temperature record:

December, 1903, mean	23.4°
January, 1904, mean	17.9°
February, 1904, mean	18.6°
Mean	20.0°

During the years 1852-1904, the coldest December was in 1872, mean temperature, 20.6°; the coldest January was in 1857, mean, 10.8°; and the coldest February was in 1901, mean, 18.1°. Although the general average of the present winter is the lowest on record, yet the individual months have been exceeded.

Other cold winters, according to Miss Larned's records, are as follows:

1856-57, mean	22.3°
1867-68, mean	21.4°
1872-73, mean	22.5°
1874-75, mean	22.0°
1892-93, mean	20.7°

The warmest winter was 1889-90, mean, 31.7°.

LOCAL STORM AT PORTLAND, OREG.

Mr. E. A. Beals, District Forecaster at Portland, Oreg., describes a windstorm, or incipient tornado, which passed through the eastern portion of that city on February 26. A low pressure area was central that morning off the northwest Washington coast. Therefore Portland was in the southeast quadrant of the cyclonic disturbance and about 400 miles from its center.

At 10:42 a. m., local time, a very black, low cloud was observed at the station, passing rapidly toward the east-northeast. The barometer rose suddenly .04 of an inch and then fell rapidly to the starting point. Wind and temperature, also, fluctuated rapidly, and heavy hail fell for about three minutes.

The greatest destruction occurred about 4 miles from the station, in what is known as Barretts Addition, where two houses were destroyed and others damaged. While the dis-

tribution of the debris did not positively indicate gyratory winds, the force exerted appeared to be greater than is probable in a straight line blow. The houses destroyed were not very substantially built. The trees prostrated varied in diameter from 3 inches to 1 foot. They were all coniferæ with bushy tops. Those that were broken off were small in size and where broken gave no indication of being subjected to a twisting force. The storm came from the west-southwest and moved toward the east-northeast. The tops of the trees to the right of the center of the storm track pointed a trifle to the east of north, and those to the left of the center pointed a trifle to the west of north.

Witnesses describe the cloud as very black and close to the ground; some of them noticed a single flash of lightning, but only one observed any whirling motion or funnel shape. They agree that the rain was very light before the storm, but quite heavy for about fifteen minutes after it had passed. Heavy hail began to fall just before the wind struck the buildings. It was oval in shape and about the size of marbles. One person saw two clouds, which approached each other from the northwest and southwest, and, after meeting, seemed to roll down almost to the ground and then move rapidly toward the northeast.

The width of the path of destruction was 200 feet and the length nearly ten miles. In the center of its path there were houses as well as trees that escaped injury, and the people living in them did not notice that the storm was uncommonly severe. There were no lives lost, but several people were slightly wounded. The damage to property amounted to about \$5000.

BRIGHT METEOR OF SEPTEMBER 15, 1902.

Mr. E. L. Mosely, of Sandusky, Ohio, has made a special study of a remarkable meteor that passed northward over eastern Ohio about 5.42 a. m., September 15, 1902, and was seen by observers in Michigan, Ontario, Indiana, Pennsylvania, New York, and West Virginia. He desires as many additional records as possible. Will not all who read this paragraph kindly examine their old records, diaries and memoranda, scrap books, and local newspapers, and send Mr. Mosely whatever they find bearing on this meteor? The mere fact that it was seen or heard will be of value. Many times, when the sky is covered with clouds, the observer merely hears a great noise, like an explosion, and knows not the origin of the noise. Sometimes it is attributed to an earthquake; at other times to the blowing up of a distant powder mill or steam boiler; sometimes the windows rattle and it is spoken of as an earthquake. Whatever happened on the morning of September 15, 1902, over a region between western North Carolina and upper Michigan and Ontario, should be examined with reference to its possible connection with this meteor. To very distant observers it may have seemed merely like a bright shooting star.

HYPOTHESES AS TO THE CAUSE OF THE AURORA BOREALIS.

In the Bulletin of the French Society of Physics for 1903, pp. 184-220, Mr. Charles Nordmann, an employee of the Astronomical Observatory at Nice, reprints a thesis lately presented by him to the faculty of sciences at Paris. He develops arguments in favor of the hypothesis that the aurora, as observed on the earth, is the result of Hertzian waves that emanate from the sun, and that are registered regularly at the magnetic observatories, just as the ordinary electrical phenomena of the atmosphere are recorded at other observatories. He has tried to prove logically that the sun sends out such Hertzian waves of greater intensity from the regions, and at the epochs, of the greatest solar activity; that is to say, from the regions of spots and faculae and at the moments of the maxima of solar spots. He finds that the form and orientation of the detailed struc-